

# HTIS

## BULLETIN

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### The Many Faces of Mold in Human History

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Over the course of time, scientists have found that mold may have been the driving force behind a number of interesting phenomena including stories of leprosy in the Bible, the Salem Witch Trials, the Irish Potato Famine and the curse of the mummy's tombs. The written history of contaminated housing and its health effects can be traced back thousands of years. Leviticus Chapter 13:1-47 and 14:33-47 is one of the oldest known references to ill health effects and contaminated housing. Some recent archaeologists believe that individuals referred to as "Lepers" were actually people with fungal infections. The bible speaks of isolation and purification of people with

skin diseases, and mold clean up. In biblical times, the priest acted in a similar fashion to today's home inspector. If mildew was found in the homes, the priest would order the contaminated stones be torn out, the inside walls to be scraped clean, and the old stones replaced with new ones, and the walls to be replastered. The home was then monitored for regrowth. Mold remediation back then was not much different from what is done today.

Mold-induced food poisoning called ergotism (a toxic condition produced by eating grain, grain products (such as rye bread), or grasses infected with ergot fungus) may have been responsible for the Salem Witch Trials of 1692. The fungus *Claviceps purpurea*, which was believed to have infected the rye crops of Salem, Massachusetts, produces ergot, a chemical with effects similar to LSD. It may also have been responsible for the development of the hallucinations, seizures, mental disturbances, miscarriages, and even

death in small children all of whom could have been mistaken for witchcraft or satanic influences. Mold infected crops causing epidemics and mass hysteria can be dated as far back as the 14th century.

In 1845, Ireland's population totaled 8 million people, 4 million of which were enormously dependant on potatoes as a food source for humans and animals alike. A period of rain, which lasted from May 1845 until March 1846 provided textbook conditions for the rapid reproduction of the fungus *Phyophthora infestans*. This fungus grew on the leaves of potato plants causing entire fields to rot within weeks. Farmers were forced to use their uninfected seed potatoes for food and were therefore unable to plant a new crop the next year. Starvation quickly spread throughout Ireland; three and a half million people died from starvation and disease or were forced to leave the country.

The tombs of ancient Egypt are famous for their "curses" that call for death and destruction to those who enter. Many of the explorers who suffered from the supposed "curse" experienced symptoms similar to those caused by exposure to *Aspergillus*, a

mold that has been found throughout the Egyptian tombs. Egyptians often buried food, jewels, and other treasures along with their loved ones for use in the afterlife. This food may have provided the perfect nutrient source for the mold *Aspergillus* and other such molds.

The most notorious case of the mummy's curse occurred with the opening of King Casimir's tomb in Poland on April 13, 1973. Within a few days after opening the tomb, four of the 12 researchers present had died. Shortly thereafter, six more died. One of the two remaining survivors was a research microbiologist; he suffered equilibrium problems for five years but was able to perform some detailed microbiological examinations of the tomb to determine if there were correlation between his illness and anything found in the tomb. He found traces of three different species of fungi on artifacts that had been removed from the tomb: *Aspergillus flavus*, *Penicillium rubrum*, and *Penicillium rugulosum*. These fungi produce aflatoxins B1 and B2 and are believed to have caused the deaths of the 10 researchers.

It has also been speculated that these fungi may have

been responsible for the death of Lord Carnarvon, who died a few months after exploring King Tut's tomb in 1922. When the mummy of King Tut was examined in 1976, over 370 separate fungal colonies containing 89 different fungal species (including *Aspergillus*) were discovered growing on the mummy. During an analysis of 40 mummies in 1999, a German microbiologist discovered that each of the mummies contained several potentially dangerous fungal spores. Due to this, evidence, scientists now take extra precautions such as wearing personal protective equipment when handling mummies and exploring new tombs.

Recent media coverage leads us to believe that molds are a new problem, but these examples show that molds have played an important part in the course of human history.

Reference: 1. Aero IAQ Tech Tip #97 - The Many Faces of Mold in Human History. 2. Aerotech Monitor, Vol 6. Issue 2, Spring 2003, page 9 website: <http://www.aerotechlabs.com/downloads/pdf/spring03AERO.pdf>

## OSHA's Safety and Health Information Bulletin on Mold

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The U.S. Occupational Safety and Health Administration (OSHA) issued a "Safety and Health Information Bulletin" which provides information and recommendations on preventing mold growth and protecting the workers who work in the prevention and cleanup of mold.

According to the OSHA's "Trade News Release" indoor exposure to mold can cause **allergic reactions and asthmatic attacks in some individuals**. Exposure to mold can also cause other types of allergic reactions, including hay fever type symptoms, skin rashes, and irritation to the eyes, noses, throat, and lungs in both mold-allergic and non-allergic people.

In the bulletin, OSHA provides some basic information on how to prevent, control and remove mold in buildings, thus, reducing the health risks to those who work in those building as well as those who are doing the mold remediation. The OSHA Administrator, John Henshaw, believes

that workers who have little or no experience with mold remediation may use this information to determine if a mold problem exists and whether the contamination can be managed in-house or if outside assistance is required. It is a good source of information on mold.

The DOD safety and health personnel, building managers, custodians, and others responsible for building maintenance are encouraged to reference this bulletin on mold whenever the subject arises. The Bulletin includes the following:

- Molds are found almost everywhere and can grow on virtually any substance as long as moisture and oxygen are present.
- Recommendations on how to prevent mold growth.
- Proper use of personal protective equipment (PPE).
- Ways to assess mold or moisture problems.
- Methods to cleanup damage caused by moisture and mold growth.
- Checklists on mold prevention tips, how to determine if a mold problem exists

- Sampling methods and remediation equipment.

In addition to allergic reactions in people, molds can damage building materials and if left unchecked, can eventually cause structural damage to wood-framed buildings by weakening floors and walls.

For more information, DOD personnel can visit the OSHA website at: [http://http://www.osha.gov/pls/oshaweb/owasrch.new\\_search\\_results?p\\_text=molds&p\\_title=&in\\_clause='FULL\\_SITE'&p\\_status=CURRENT&p\\_category=&p\\_logger=1](http://http://www.osha.gov/pls/oshaweb/owasrch.new_search_results?p_text=molds&p_title=&in_clause='FULL_SITE'&p_status=CURRENT&p_category=&p_logger=1)

Reference: A Trade Release October 14, 2003, POC is Frank Mellinger, phone: 202- 693-1999

# Mold Allergies

## *What is it?*

Molds are microscopic fungi, which, unlike plants, are unable to produce their own food from sunlight and air. Molds are made up of clusters of filaments and live on plant or animal matter that they decompose for their nourishment. With tens of thousands of different varieties, molds are among the most widespread living organisms. Many molds reproduce by releasing spores into the air, which then settle on organic matter and grow into new mold clusters. These airborne mold spores are far more numerous than pollen grains and, when inhaled, can produce allergic symptoms.

## *Where is Mold Found?*

Mold can be found in most environments and, unlike pollens, do not have a strictly limited season. Mold growth is encouraged by warmth and high humidity, and therefore, growth is most prevalent during the humid seasons of the year. Molds are found out-of-doors and in the home. Mold spores produced outside become widely dispersed through the air and can enter the home. Other molds are produced in the home, especially in areas of high humidity such as showers and basements.

Many molds reproduce by releasing spores into the air. These airborne mold spores, when inhaled, can produce allergic symptoms.

## **Alleviating the Problem**

### *Discouraging Growth*

Mold flourishes in dark, damp places that are poorly ventilated and in areas where water pools. Moisture and warmth can accelerate the growth of dormant mildew spores on most surfaces. Once the area of mold growth has been identified, an antibacterial should be used to kill the mold spores and an inhibitor used to prevent re-growth. Modifications such as increased ventilation and proper drainage should be used to discourage mold growth.

### *Indoor Care*

Keep humidity low, between 35 and 40% if possible, but in no case over 50%. Use a gauge to monitor relative humidity. Use an air conditioner or dehumidifier in times of high humidity. To help trap airborne allergens, use a special air conditioner filter and/or a HEPA room air cleaner. Convection heat units can make mold spores non-viable and reduce the spread of mildew. Avoid over-humidification in the winter. Keep humidifier mold-free by cleaning with diluted bleach solution or white vinegar. Central humidifiers should be checked and cleaned frequently. Clean all visible mold from walls and ceilings. Add a mold inhibitor to paint before applying. Mold is present on the bark of wood. If using a fireplace or wood burning stove, do not store any firewood inside. If you must, store just enough for that day's use.

### *Bedroom Care*

Ideally, carpeting should be removed. If you do carpet use very short pile. Encase bedding in allergen-impermeable zippered covers. Avoid foam rubber pillows and mattresses, as they are particularly likely to become moldy. Because they are damp and dark, closets attract mold. Dry all shoes and boots thoroughly before storing. Use a chemical moisture remover in closets and storage spaces.

### *Bathroom Care*

Use an exhaust fan or open windows to remove humidity after showering. Use a squeegee to remove excess water from the shower stall, tub and tiles. Wash shower curtains, bathroom tiles, shower stall, tub and toilet tank with mold-killing and mold-preventing solutions. Do not carpet the bathroom.

### *Kitchen Care*

Use an exhaust fan to remove cooking vapors. Mold grows in refrigerators, particularly around door gaskets. Empty water pans below self-defrosting units frequently. Remove spoiling foods. Empty garbage containers frequently and keep clean to prevent the growth of mold.

### *Basement Care*

Dry all clothing immediately after washing and vent the clothes dryer to the outdoors. Allergic individuals should never have their bedroom on the basement level since it is an area of high humidity and therefore, promotes mold growth. Carpet and pad should not be laid on a concrete floor. Vinyl flooring is a better choice. Correct seepage and/or flooding problems and remove water-damaged carpet. Cover dirt floor with plastic vapor barrier. Remove moldy items and keep basement clean. Add a mold inhibitor to paint especially on cinderblock or brick walls. If prone to moisture or flooding ensure you have a working sump pump and dehumidifier.

### *Outdoor Care*

Proper filtration can help prevent mold from entering living quarters. Air conditioners and vent openings are prime locations for trapping molds at point-of-entry. Vent or central furnace filters and room air cleaners are helpful in removing airborne spores. Units with heating elements to kill airborne mold spores can prevent the spread of mold. A tight-fitting facemask is important for preventing the inhalation of mold spores when doing yard work. Avoid exposure to soil, compost piles, sandboxes, hay, fertilizers and barns. Prune or cut trees and eliminate vines to prevent shading of the home. Correct drainage problems near the house as pooled water greatly increases mold formation. Avoid camping or walking in the woods where mold growth on rotted logs and other vegetation is high.

## **General allergy Tips and Trivia**

**If you have a moustache and you have allergies , you could have a problem.** It holds pollen right under your nose ready for you to breathe it in. So, add that hair to your shampooing sessions.

**Love flowers but hate the sneezes?** Look for low-pollen plants such as hibiscus, periwinkles, azaleas and roses. Symptoms often attributed to roses are usually due to grass pollen.

**If you are planning to have your house fumigated,** be sure pyrethrum is not used. It is derived from 100% African Chrysanthemum flowers.

**Fight allergy-causing mold by painting indoor walls that are likely to be damp** with mold-inhibiting paint, or by adding mold inhibitor to standard paint.

**Did you know that there are allergy-free rooms at some hotels?** Ask about them. Among the hotels are Best Inns & Suites.

**Did you know that true food allergies are infrequent but a serious problem? An allergy activates the immune system and often causes skin rashes, vomiting or breathing problems within 10 - 45 minutes.** More common than food allergies are **food intolerances**. They cause digestive symptoms, such as gas, bloating, diarrhea or skin rash. Although most children lose their sensitivity to milk and eggs by age 3, food allergies involving peanuts, fish, shellfish and tree nuts can last a lifetime. Both allergies and intolerances can run in families.

**Put your child's favorite stuffed toy in your freezer during the day to kill dust mites.**

**Leave a room that was just dusted or vacuumed for at least three hours** to allow airborne dust to resettle. Best to use a vacuum with a HEPA filter or one that puts the dirt into water.

**Run your range fan while cooking to lower humidity and remove fumes and odors.** If the fan is not vented outside, you can open the kitchen window when cooking.

**Remember to empty the drip pan under your refrigerator regularly.** The combination of food particles and standing water is irresistible to mold.

**Hay fever sufferers should wash their hair at night to remove any pollen and keep it from settling on pillows and bedding.**

**Expired Epi Pens may not deliver enough epinephrine to stop a severe allergic reaction.** If you use an Epi Pen, check the expiration date and replace any pen that has expired.

**If you live with a pet, close or filter the air ducts to your bedroom if you have forced-air heating/cooling.**

**Addicted to a nasal decongestant?** Have you been using an over-the-counter spray such as Afrin, Dristan or Neosynephrine? They are great to use twice a day for about 3 days for the stuffiness of a

bad cold but they were never intended to be used indefinitely. They shrink the lining of the nose, but if you use them too frequently, your nose reacts and becomes even more swollen than it was in the first place.

**Every day, each of us breathes in two heaping tablespoons of assorted particles...**dust, pollen, mold, smoke, carbon, tar, rubber, metals, and bacteria...plus countless chemicals.

**If you're doing some holiday decorating**, watch out for mites and molds. They love fall leaves, pine cones and evergreen branches and they are hard to clean off. Give yourself a break. Choose nuts, pumpkins, and unscented candles.

**To help reduce molds and mildew** run a night light continuously in dark closets.

**That thundering sound known as snoring** may be due to nasal congestion. This, in turn, may be caused by dust in the bedroom, down pillows, quilts, smoking and too much salt in your diet.

**Control cockroaches**, a major cause of allergies, by throwing away piles of papers and keeping food in airtight containers.

**If you're sensitive to ragweed**, but love herbal teas, avoid camomile, goldenrod, marigold and yarrow teas.